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IS COMPETITION IN INDUSTRY RUINOUS

SUMMARY

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It is a generally accepted view that competition among railroads, unless restrained, tends to become "ruinous," that is, fails to establish a normal level of rates sufficiently remunerative to attract the additional investments of capital that recurrently become necessary.¹ The main explanation of this tendency toward ruinous competition is the proportionately large investment in fixed and specialized plant.² The large investment in fixed plant gives rise to large fixed expenses, that is, expenses that do not vary in proportion to changes in the volume of traffic; and it thus pays a

¹ See Ely, *Outlines of Economics* (1916), p. 199. Professor Knauth defines destructive or ruinous competition as "that which forces prices to a point where the capital invested receives no return, and even fails to maintain its value intact" (*Political Science Quarterly*, vol. 31, p. 245). But competition may fairly be regarded as ruinous, even tho the capital invested receives some return, if the return is inadequate to attract the requisite supplies of future capital.

² If the plant were not specialized as well as fixed, the character of the business might be changed as rates or prices fell. Cf. p. 490.

railroad to attract additional traffic at any rate which exceeds the extra cost incurred on account of the increased business. The rate on this additional traffic need not cover its proportionate share of the fixed expenses, since these expenses will continue whether or no the added traffic be taken; it suffices if the rate is high enough to make some contribution, however slight, to the fixed expenses. The added traffic thus secured may be new traffic or it may be traffic that had been moving over another railroad line. If the former, its carriage represents a net gain; if the latter, it represents a diversion of business not likely to be submitted to by the other road. It is as true of the second road as of the first that its expenses are largely fixed, and therefore it cannot tamely submit to such a loss of its business. If it meets the rate of its competitor, the particular item of traffic affected will fail to make its proportionate contribution to the fixed expenses, but it is better that the competitive traffic make some contribution to these expenses than none. Accordingly the second road will usually meet the rate or even cut it still further, thus leading in all probability to a further cut by the original trespasser until finally the rate may fall so low that it barely covers the extra cost occasioned by its movement. Below this point it would not ordinarily be to the interest of either road to go. But at this point, it is generally conceded, the rate on all competitive traffic may remain for considerable periods of time. If, then, there are present the conditions favorable for such a struggle, that is, transportation facilities in excess of the traffic offered at rates remunerative to the railroad, and a large percentage of traffic that may move by two or more roads instead of being local to any one road, rates may for some period of time be ruinous to both roads. This competition may be regarded as ruinous even

tho the rates are sufficiently high to permit both roads to meet their interest charges (or other fixed charges), providing they are not sufficiently high to permit an adequate return to the stockholders.¹ It should be abundantly clear that rates that deny stockholders adequate dividends as well as those that deny bondholders their interest on a proper indebtedness will discourage further investments in railways, and will result in an inferior quality of service. The unfavorable effects of such a policy will react injuriously upon the public; and it is therefore to their interest to permit adequate rates in the first instance. It may consequently be assumed that public policy in the long run will demand that where competition is actually ruinous it be restrained in some fashion, in order that there may be maintained conditions that permit investments in railway property honestly and efficiently administered to earn an adequate return.

So much may be said to be granted. Of recent years, however, there has been a disposition on the part of some writers ² to contend that the above principles likewise apply to industrial enterprises; and therefore to argue that competition is not only an unsatisfactory regulator of prices and profits, but the ruination of industries; that it is a case of "trust or bust." It is the purpose of this paper to analyze this argument. It is proposed, first, to compare railroads and industrial enterprises as regards the tendency to ruinous competition; and, second, by a study of individual industries to consider whether the facts support the claim that the formation of trusts has been necessitated by the ruinous nature of competition.

¹ I assume, of course, that the amount of bonds or stock outstanding is not excessive.

² For example, Knauth, *Political Science Quarterly* (1915), vol. 30, p. 578; and Wyman, *Control of the Market* (1911), pp. v, vi.

I. COMPARISON OF RAILROADS AND INDUSTRIAL ENTERPRISES

A. *Statistical Analysis*

Theoretically, the best single index whereby to measure statistically the degree to which competition is ruinous among railroads and industrial enterprises would appear to be the ratio of fixed to variable expenses. If fixed expenses are relatively large, the inducement to cut rates or prices is great; for up to the point of the most advantageous utilization of the plant the expenses do not increase proportionately as new business is taken on. If, on the other hand, the variable expenses are relatively large, the inducement is not great; for new business secured at concessions in rates and prices will be substantially as expensive to handle as the regular business paying remunerative rates. If, notwithstanding the reduced margin between prices and costs, an individual concern persists in bidding for additional business, its competitors can ordinarily afford to sacrifice a part of their business, since as they reduce their output their expenses decline also. They may not make the sacrifice at once, to be sure, but they are likely to withdraw at a comparatively early stage. Where the ratio of variable expenses is high, therefore, we should not expect ruinous competition, first, because the inducement to take the competitor's business is not so great, and, second, because the competitor is not under such insistent pressure to oppose the loss of a part of his business. These observations hold particularly, of course, where the reduction in price perforce applies to the whole output.

Unfortunately, however, the data are not available for a comparison of railroad and industrial concerns in this regard. So far as railroads are concerned careful

computations have been made of the ratio of the fixed expenses to the variable expenses. Thus Professor Ripley finds that approximately two-thirds of a railroad's expenses are constant (or fixed), that is, independent of the volume of traffic.¹ The percentage is different, of course, for different railroads, and fluctuates from time to time, but it is indisputable that up to the point of the most effective utilization of the plant added traffic can be carried without a corresponding increase in costs. As a result there is keen competition for traffic — a competition that tends to become ruinous. In the case of industrial enterprises, however, there is not, so far as I know, any such careful calculation. This is doubtless to be explained by the great diversity of industrial enterprises, which prevents the making of any calculation except one of limited application; and by the fact that industrial concerns are not compelled by law to subdivide their expenses as minutely as railroads, and therefore it is difficult to determine accurately the extent to which their expenses are independent of the volume of business and the extent to which these expenses vary with the volume of business. Notwithstanding the difficulties of statistical measurement, however, it can hardly be denied, I think, that a much larger proportion of the expenses of a typical business enterprise, even one with large plant, is variable than in the case of railroads. This would seem to follow from the large part played in the expenses of industrial concerns by the cost of raw materials, most of which are finally consumed in the act of production, and practically all of which constitute a variable expense.² Tho a railroad also finally consumes some materials, such as coal or oil, in the act of giving transportation service, a large part of the materials consumed by it are employed in supplying

¹ Railroads: Rates and Regulation, p. 55.

² Cf. p. 491.

transportation facilities and are thus more or less permanent in character, as, for example, rails, ties, timber.

The opinion expressed in the preceding paragraph is borne out by a comparison of railroads and industrial concerns as regards the importance of "interest charges" among their expenses. Tho the term "interest charges" is not synonymous with constant expenses or fixed expenses, since it represents only a part of the non-variable expenses, nevertheless it constitutes such a large proportion of the constant expenses that it may fairly be used as a *measure* thereof. Clearly, therefore, it throws light upon the comparative degree of pressure present in railroad and in manufacturing industries to get additional business. It has the advantage, moreover, of being subject to statistical measurement, as the larger term in the present state of our information is not.

The ratio of "interest charges" to total expenses for railroads and for industrial corporations is shown in the table below:¹

RATIO OF INTEREST CHARGES TO TOTAL EXPENSES (1914)	
Railroads (operating), Class I and II roads	Ratio
Eastern District	11.2
Southern District	15.1
Western District	17.0
<hr/>	
Total operating roads	14.1
30 ² Industrials	3.1 ³

A word of explanation as to this table. In the case of industrial corporations, tho the term "interest charges" generally means exactly what it implies, in a few instances other items of fixed charges are included also.

¹ The data for industrial corporations were secured in part from Moody's Manual of Corporation Securities and in part by correspondence; that for the railroads from the Statistics of Railways, 1914.

² This represents all the leading industrials for which the data were obtainable.

³ This is an unweighted average.

In the case of railroads in no instance is anything except interest charges included. Such lack of complete comparableness as exists therefore tends to exaggerate the tendency toward ruinous competition among industrials rather than among railroads. The term "total expenses" is self-explanatory; it includes all the expenses of conducting the business, not including, of course, dividend payments and sums carried to surplus. The year 1914 was chosen for two reasons: first, to eliminate the abnormal fluctuations resulting from the war; and, second, to permit comparison with the results of the census of 1914.

An examination of the table shows that for the operating railroads as a whole (Class I and II roads) the ratio of interest charges to total expenses was 14.1 per cent; and that for the three major districts (Eastern, Southern and Western) it was 11.2 per cent, 15.1 per cent, and 17.0 per cent, respectively.¹ For industrial concerns the ratio of interest charges to total expenses was 3.1 per cent; and there are many industrials, not included in this average, which have no interest charges at all.² It is thus clear that the constant expenses in so far as these consist of interest charges are four and one-half times greater for railroads than for industrials — greater, that is, not absolutely, but relative to expenses. The probability of rate concessions leading to ruinous competition is thus correspondingly greater. And how much more would this be so did we take as the basis of calculation, not the ratio of *interest* charges to total expenses, but the ratio of *fixed* charges to total expenses. Many rail-

¹ If we included the interest charges of the non-operating subsidiaries of the operating roads the ratios would be 16.0 per cent for all roads, and 13.2 per cent, 16.3 per cent, and 19.1 per cent for the three major districts, respectively.

² Among the concerns whose total expenses in 1914 are reported, but which had no bonds, are: American Beet Sugar Co., American Woolen Co., B. F. Goodrich Co., Pittsburgh Plate Glass Co., Sears, Roebuck & Co., United Drug Co. (1917), and Woolworth Co.

roads have large fixed charges, such as rentals of leased lines, no corresponding item for which is ordinarily present in the case of industrial corporations. These fixed charges other than interest charges are often considerable in amount; and their existence accentuates the tendency toward ruinous competition among railroads. Thus the inclusion of the rentals of leased lines would bring the railroads' percentage of fixed charges to total expenses up to 18.2 per cent for the operating railroads as a whole, and up to 16.1 per cent, 17.3 per cent and 20.8 per cent for the railroads by major districts. These figures do not include the other items of fixed charges shown in the *Statistics of Railways*, but are merely interest charges and rentals. It thus appears that at a conservative estimate the industrials' constant expenses in so far as these are statistically measurable are only about one-fifth as large in proportion to total expenses as in the case of railroads. There thus appear to be differences in the degree at least to which competition is ruinous in the two branches.

But, it will be urged, it is not claimed that the tendency toward ruinous competition is present in all industries to the same degree as in the railroad industry, but only in certain industries characterized by large and specialized plant, such as, for example, the iron and steel industry. I have, therefore, prepared the two tables below, showing the ratio of interest charges to total expenses for fifty leading railroads and for thirty leading industrial concerns. The industrial concerns chosen were largely those for which data were available in the financial manuals, or obtainable by correspondence.

RATIO OF INTEREST CHARGES TO TOTAL EXPENSES

Railroad	Ratio of interest charges to total expenses
Atchison, Topeka & Santa Fe	15.3
Atlantic Coast Line	16.6
Baltimore & Ohio	16.8
Bessemer & Lake Erie	3.3
Boston & Maine	7.0
Central of Georgia	14.1
Central of New Jersey	9.6
Chesapeake & Ohio	22.1
Chicago & Alton	18.1
Chicago, Burlington & Quincy	8.6
Chicago Great Western	7.7
Chicago, Milwaukee & St. Paul	17.0
Chicago & Northwestern	12.4
Chicago, Rock Island & Pacific	15.0
Chicago, St. Paul, Minneapolis & Omaha	12.9
Cleveland, Cincinnati, Chicago & St. Louis	11.1
Colorado & Southern	25.7
Delaware & Hudson	12.8
Delaware, Lackawanna & Western	0.5 ¹
Denver & Rio Grande	24.1
Erie	17.3
Florida East Coast	22.4
Great Northern	17.7
Hocking Valley	17.6
Illinois Central	11.7
International & Great Northern	12.6
Kansas City Southern	18.8
Lehigh Valley	9.3
Louisville & Nashville	12.7
Michigan Central	6.3
Missouri, Kansas & Texas	20.3
Missouri Pacific	24.8
Mobile & Ohio	11.5
New York Central	13.8
New York, New Haven & Hartford	18.6
New York, Ontario & Western	14.7
Norfolk & Western	12.6
Northern Pacific	20.1
Pennsylvania Railroad Co.	5.8
Pennsylvania Co.	8.8

The per cent would be 16.7 if the rentals of leased lines (\$5,898,975) were added.

Père Marquette	17.2
Philadelphia & Reading	4.7 ¹
St. Louis-San Francisco	23.2
Seaboard Air Line	21.3
Southern Pacific	11.7
Southern	16.1
Union Pacific	19.7
Virginian	25.5
Wabash	12.2
Western Pacific	43.4

Industrials

A cordage company	3.1 ²
American Hide & Leather Co.	3.8
American Linseed Co.	6.2
American Locomotive Co.	1.7
American Smelting & Refining Co.	0.5
American Tobacco Co.	0.3
Anaconda Copper Mining Co.	0.9
Atlas Powder Co.	3.9
Baldwin Locomotive Works	4.5
Barrett Co.	2.8
Bethlehem Steel Corporation	4.7
Central Leather Co.	3.3
Colorado Fuel & Iron Co.	10.5
Cuban-American Sugar Co.	8.6
Cudahy Packing Co.	0.2
Deere & Co.	1.7
du Pont de Nemours Powder Co.	3.8
General Asphalt Co.	2.1
General Electric Co.	0.7
Giant Portland Cement Co.	3.8
Hercules Powder Co.	2.8
Lackawanna Steel Co.	11.3
Morris & Co.	0.7
Republic Iron & Steel Co.	4.1
Sloss-Sheffield Steel & Iron Co.	5.0
Studebaker Corporation	1.1
U. S. Rubber Co.	2.5
U. S. Steel Corporation	5.8
Utah Copper Co.	0.5
Westinghouse Electric & Mfg. Co.	4.2

¹ The per cent is low because the Reading Company (the holding company) owns all or most of the equipment of the railway.

² This figure was given me upon an agreement not to disclose the identity of the company.

An examination of this table brings out the fact that not one of these industrial concerns had as high a ratio of interest charges to total expenses as the average for the railroads as a whole. Only one (the Lackawanna Steel Company) had as high a ratio as the average for the railroads in the Eastern District, the district in which interest charges were the lowest as compared with expenses. The industry that most closely approaches the railroad industry as regards a large proportion of fixed expenses is, as one would expect, the steel industry. Save for this industry, however, there is hardly one ¹ which seems to fall within the same class as the typical railroad concern.

To these conclusions it may be objected that the ratio of "interest charges" to expenses is not an altogether fair basis of comparison, since a concern with large fixed plant may not have seen fit to bond itself heavily, whereas another concern with relatively small fixed plant may have done so. That this is true in individual instances is readily conceded, yet the inclusion of a comparatively large number of concerns reduces the force of the objection. Moreover, in view of the well known fact that the raising of as large a part of the capital as is safe through the issuance of bonds increases the profits of the stockholders, it is to be presumed that manufacturing concerns in general have issued bonds and thus accumulated interest charges to the degree permissible under canons of sound, conservative finance. In fact, it is probable that industrial corporations have been less conservative in this regard than railroad corporations, thus tending to increase the interest charges of the industrial corporations and (so far as this item is used as a measure of the constant expenses) to exagger-

¹ One sugar concern shows a relatively large amount of interest charges, but the average for the three sugar companies included in the table is low.

ate rather than underestimate the importance of fixed plant. On the other hand it should be said that the relatively stable character of the railway business has permitted the resort to bonds to a greater extent, and that the large interest charges are thus not a sure indication of a relatively large fixed plant. It is a question therefore of the relative strength of these opposing factors.

Another method of statistical approach sometimes employed is a comparison of railroads and manufacturing industries with respect to the relationship between the capital investment and the annual value of products (gross annual revenue in the case of railroads). The underlying assumption, of course, is that industries with large capital investment as compared with gross receipts would be subject to more severe competition than those industries in which the capital investment was relatively small.

For industries the only available figures are those compiled by the census. In 1914 the capital investment of all industries was \$22,790,979,000, and the annual value of the products was \$24,246,434,000.¹ The ratio of capital investment to annual value of products was thus 94 per cent. The term capital as employed by the census includes, it should be noted, land, buildings, machinery, tools, materials, stocks in process, finished products, cash, bills receivable, etc. It thus includes many items that can in no sense be regarded as fixed capital.

It is difficult to obtain an item for railroad investment which is strictly comparable with the figure used for industries. One possible item would be the railway capital (outstanding stock and funded debt). In 1914 the railway capital of the operating roads (Class I and

¹ Abstract of the Census of Manufactures, 1914, pp. 516, 517. The statistics of capital investment are not particularly reliable. See Abstract, pp. 11, 12.

Class II) amounted to \$17,497,286,000; the gross receipts to \$3,047,019,000; and the ratio of capital to gross receipts to 574.2 per cent.¹ The railway capital thus exceeded the gross receipts by nearly five times. To this basis of calculation it will be objected that the capitalization of the railways may be excessive, and in so far as this is true the importance of capital investment is exaggerated. Whether the objection is properly taken will not be known until the valuation of the railways is completed, if indeed it is known then. However, it can hardly be doubted that a "proper" railway capital will nevertheless several times exceed the gross receipts, whereas the capital of industrial concerns is actually less than their gross receipts as measured by the "annual value of products."

To meet a possible objection that "railway capital" is not fairly comparable with the "capital investment" of industrial enterprises, we may employ in the case of railroads the item of "property investment." It is understood, of course, that property investment as presented by the railroads' books does not show the actual investment in property; but since it excludes a considerable number of items (cash, accounts receivable, materials, etc.) that were included in the "capital invested" in manufactures, it undoubtedly underestimates rather than exaggerates the importance of capital in the railroad industry, that is, so far as a comparison with manufacturing establishments is concerned. In 1914 the property investment (deducting reserve for accrued depreciation) of the operating roads (Class I and Class II) was \$13,621,714,000; the gross receipts were \$3,047,019,908; or a ratio of 447.0 per cent,² as

¹ Statistics of Railways, 1914, pp. 31, 55. If we included the capital of the non-operating subsidiaries of the operating roads the ratio would be 664.4 per cent.

² Ibid, 1914, pp. 55, 63, 64. If we included the property investment of the non-operating subsidiaries of the operating roads the ratio would be 523.1 per cent.

compared with a ratio of 94 per cent for industries. It is thus evident that in so far as these figures show anything they show that for railroads as a whole the capital investment is much larger proportionately than for industrial enterprises. This would be even more apparent were we to include in the "property investment" of railroads those items, such as cash, accounts receivable and materials, which are included in the census figures of capital investment in industries. The addition of these three items would raise the percentage of capital for the operating roads from 447.0 per cent to 489.2 per cent,¹ as compared with 94 per cent for all industries, or nearly four times more capital for railroads than for industries.

When similar comparison is made between the railroads and those individual industries having a comparatively large proportion of invested capital the same results appear, tho in less accentuated form. Whereas the ratio of capital to annual value of products for all industries was 94 per cent, the ratio for some of the leading industries in which trusts (horizontal combinations possessing monopolistic power) have been established, and in which the existence of ruinous competition might therefore be most expected, are shown below.

RATIO OF CAPITAL TO ANNUAL VALUE OF PRODUCTS

Salt.....	235.6
Beet sugar refining	227.1
Agricultural implements.....	206.3
Shipbuilding, iron and steel.....	200.4
Snuff.....	196.7
Explosives.....	172.2
Iron and steel, blast furnaces.....	145.5
Tin ware.....	144.3
Watch cases.....	143.3
Iron and steel, total, including blast furnaces and steel works and rolling mills.....	137.1

¹ To 583.4 per cent, including the non-operating subsidiaries of the operating roads.

Iron and steel, steel works and rolling mills.	136.9
Cash registers and calculating machines.	134.6
Starch.	122.0
Cordage and twine.	121.4
Wall paper.	110.9
Malt.	97.2
Matches.	93.5
Leather.	90.5
Petroleum, refining.	82.2
Smoking tobacco.	71.2
Glucose.	68.8
Tobacco manufactures, total.	62.0
Cigarettes.	60.8
Aluminum ware.	56.5
Chewing tobacco.	50.1
Cane sugar refining.	48.5
Liquors, distilled.	44.1
Tin plate and terne plate.	39.3
Slaughtering and meat packing.	32.3

The industry in this list showing the highest ratio of capital investment to annual value of products is the salt industry. An attempt was made to establish a trust in this industry, but, as will be pointed out later, with a notable lack of success.¹ The industry showing the next highest ratio is the beet sugar refining industry, hardly, as those who are acquainted with the conditions in this industry will testify, one in which there is ruinous competition occasioned by large investment in *fixed* plant. Except for the salt and beet sugar industries there is not one of these industries which does not show a ratio of capital investment to annual value of products less than one-half the corresponding ratio for railroads, no matter which one of the suggested bases for railroads be chosen. The ratio for the iron and steel industry, oftenest cited as the industry of large fixed plant, is less than one-third the corresponding ratio for railroads. The petroleum refining industry stands comparatively low in the scale, as do the cigarette, cane sugar refining,

¹ See p. 516.

tin plate, and meat packing industries. If these comparisons are of any particular value, therefore, they show that while the factors that tend to make railroad competition ruinous may be present in industry also, they are present to a much less degree.

B. *Some Theoretical Considerations*

The tendency toward ruinous competition, in so far as it may be statistically measured, does not appear to be so great for industrial enterprises as for railways. This conclusion is reinforced by reference to certain characteristics of railways that tend to make competition disastrous — characteristics that, generally speaking, are not present to the same degree in the case of industrials. These differences are hardly in the last analysis differences in kind, but they are probably sufficient to justify a different public policy in the two cases.

1. The railways are characterized by unusually large fixed plant. They thus have large fixed expenses, either in the form of interest charges on the bonds issued to finance the construction of the plant or in the form of sunk costs.¹ The expenses are likely to be in the form of interest payments on bonds, rather than charges on sunk costs, since the return to the stockholder will be larger if the railway borrows (by the sale of bonds) as much as it can with safety. These large fixed (constant) expenses, as already explained, provide a stimulus to secure additional traffic that will make some contribution toward their payment. It is true that large fixed plant is characteristic of other industries also, but not, I think it will be generally agreed, to the same degree as of railways. This opinion is substantiated — I will not say proven — by the great relative importance of interest charges

¹ See Brown, *Transportation Rates and Their Regulation*, pp. 11, 12.

among the expenses of railroads as compared with industries. The iron and steel industry perhaps comes nearest to being comparable with the railroads in this regard.

A large investment in fixed plant does not of itself lead to rate and price cutting. The inducement is present only when the traffic (or output) is not sufficiently large to utilize the plant most effectively and economically. This condition, however, is more likely to be present with railroads than with manufacturing industries. An increase in railroad traffic may easily compel an increase in plant (double tracking, for example) much greater than can be fully utilized for some time, and meanwhile there will be a persistent pressure to cut rates in order to attract traffic from a competing line. With manufacturing industries, however, an increase in the demand for any given article — corresponding to the increase in traffic in the case of railroads — does not ordinarily produce such an excessive capacity locally, since manufacturing facilities can be increased in a proportion nearer to the increased demand, and since the market for manufactured products is usually wider. An exception, of course, would be the manufactured products that have large bulk and low value. An increase in the demand for bricks, for example, may lead to the construction of an additional brick plant, and thus to a local surplus producing capacity; whereas the same situation would not result to the same extent from the construction of additional shoe factories. Inasmuch therefore as industrial concerns operate more nearly at capacity than railroads, price cutting is not likely to go to such lengths; for the stage is sooner reached when no additional business can be handled, or if so can only be handled at such an increase in unit costs that the quest for additional business becomes unprofitable. As Professor Davenport has said, too many machines to a

given space, too many men to each machine, etc., represent "sins against the law of the proportion of factors."¹

2. The railway plant is not only large, but it is highly specialized in character. The tendency toward ruinous competition, it should be noted, does not result solely from the presence of large fixed plant not fully employed. For if rates or prices in an industry characterized by large plant fall to an unprofitable level, the plant may conceivably be used to manufacture some allied product, the price of which is sufficiently remunerative. But when the plant is specialized in character, wedded, as it were, to the fortunes of that particular industry, then the tendency toward ruinous competition appears. The railway clearly falls within this group; its roadbed and much of its structures and equipment are suited to no other purpose than the provision of transportation. Even tho the operation of the road bids fair to remain unprofitable indefinitely, most of the capital invested in its construction must remain irrevocably committed to that enterprise. The same holds true of some manufacturing plants — blast furnaces and coal mine shafts for example — but as the war has demonstrated, industrial equipment is rarely so fully specialized and so distinctly circumscribed in its employment as are railways.² If prices are very remunerative in other lines or very low in its own line the plant often may be converted to some other use; not so with the railway. This factor of convertibility obviously tends to reduce the severity of the competitive struggle in industry.

¹ *Economics of Enterprise*, p. 469.

² Thus locomotive plants manufactured munitions; automobile plants manufactured ships and aeroplanes; and now some explosives plants are turning to the manufacture of dyes. Again, the International Harvester Company within a few years after its organization (1902) discontinued the manufacture of harvesting machines in two of its plants; and devoted one to the manufacture of gasoline engines, tractors, and cream separators, and the other to the manufacture of wagons and manure spreaders. Report of the Commissioner of Corporations on the International Harvester Co., p. 145.

3. The railway industry is par excellence the industry of increasing returns. This is not only because of the fact of large fixed plant, but because a large part even of its operating expenses are constant in amount, that is, do not vary with the traffic. Thus Professor Ripley points out that over one-half of a typical railroad's operating expenses are constant, and that approximately the same percentage holds for that part of the operating expenses technically known as conducting transportation. This would seldom be true of manufacturing industries, whose costs in much larger degree are comprised of costs of raw materials, which necessarily vary almost directly as the scale of operations. The writer has endeavored by correspondence to secure detailed information with regard to the proportion of costs that consist of raw materials — with slender results thus far. However, seven concerns — three meat packers, one cordage company, one farm implement company, one snuff company and one clothing company — reported that the following percentage of their total cost consisted of the cost of raw materials: 88.8 per cent; 85 per cent; 80 per cent; 86.2 per cent; 75 per cent; 54.1 per cent; and 52.7 per cent. Further confirmatory evidence may be found in the references cited below.¹ In general there can be no doubt that a much larger proportion of the operating expenses of industrial concerns than of railways varies directly with the amount of business.² If the realization of this fact deters the ordinary concern from carrying competition too far, how much more so must this be true of those industrial enterprises that

¹ Report of the Federal Trade Commission on the Fertilizer Industry, pp. xvii, 11, 223-228; on the Book-Paper Industry, pp. 66, 67; on the News-Print Paper Industry, p. 90; on the Beet Sugar Industry in the United States, pp. 75, 76; Report of the Tariff Commission on Costs of Production in the Sugar Industry, pp. 14, 15; and Petitioner's Summary of Evidence in *U. S. v. American Can Co.* (No. 40), p. 203.

² This would not apply, of course, to power costs; for these ordinarily become less per unit, the larger the plant.

are to a greater or less degree liquidating propositions. Clearly the producers of iron ore, coal, copper, oil, and nickel have a very definite interest in reducing their output as profits decline, for they are using up an asset that cannot be replenished.¹

In this connection reference may be made to the argument that whenever an increase in the size of the business unit brings with it a net economic advantage, the competition of competitors ever growing in size will be cutthroat.² It must be conceded that if an increase in the size of the business unit continues indefinitely to produce lower costs, monopoly will result, preceded possibly by ruinous competition among concerns striving to be first to reach the low level of costs that results from the production of the total output. But this involves a very large "if." It is more probable that in industry — perhaps not in railroading — the increase in the size of the business unit beyond a certain point is accompanied by rising rather than falling costs. I propose at some later date to subject this matter to searching analysis, since the decision as to the solution of the trust problem primarily hinges upon this point; but for the present I shall assume that there is a stage at which an increase in the size of the business unit in industry no longer brings lower costs per unit of product, and that this stage is reached short of monopoly. The nearness of the approach to monopoly varies, of course, for different industries.

4. The railroad is notably an industry of joint cost.³ Since many of its expenses must be incurred to provide

¹ With copper selling at a comparatively low price (March, 1919) the larger mines are producing at only half of their capacity, and some of the smaller mines have shut down.

² See Hobson, *Evolution of Modern Capitalism* (1898), p. 121.

³ See Taussig, *Quarterly Journal of Economics*, vol. v, pp. 438 ff., and particularly p. 456.

transportation facilities in general, and cannot therefore be scientifically allocated to any particular traffic, the railroad ordinarily charges "what the traffic will bear." But if there is competition between railroads for traffic — to secure the larger returns that result from increased business — rates on articles that can bear a high freight rate may nevertheless fall to very low levels, since the "extra cost" that is definitely caused by the movement of the competitive traffic may be very low. This principle, which is closely connected with the fact of large fixed plant, holds good of course in certain industries, notably those that yield large by-products. For example, an oil refining company may sell lubricating oil and a meat packing company may sell hides at a price so low that it fails to cover its "proper" share of the joint expenses, providing they can recover these expenses and an adequate profit out of the other joint products. But in many industries, such as steel, sugar, tobacco, etc., the by-products are comparatively unimportant.

5. The number of railroads serving a given territory is perforce limited. It is generally agreed that competition is more likely to be ruinous where the number of competitors is few. If the number of competitors is large there will presumably be considerable differences in their costs. Therefore, before the price falls so low as to be ruinous to the industry as a whole, it will prove unremunerative or ruinous to the high cost companies, and they will gradually retire from the field. As they retire the output will decline, and the price will tend to rise again. In view of the fact that in most manufacturing industries the plants are numerous the tendency toward ruinous competition is less active. In railroad competition, however, there are usually only a few companies involved, and only rarely is any one of them carrying all

the traffic that it could economically handle. The motive to compete would thus appear to be stronger.

6. Competition is hardly likely to be ruinous except where a comparatively slight difference in price will cause purchasers to patronize one concern rather than another. This is undoubtedly the situation so far as railways are concerned. In earlier days shippers went "shopping" among the freight agents, intending to ship by the line that offered the best rate. A slight difference in rates at any time will suffice where shippers are able to choose without sacrificing their future position. The same is equally true, of course, of the products of most industrial concerns. However, there are notable instances in the industrial field where this is not the case. Thus, wherever there has been a marked development of brands and trade marks, or wherever competition is upon a quality or style basis, prices may be maintained by the favored concerns, even above a normal competitive level.¹ Thus, competition in the tobacco, sugar, harvester, gunpowder, whisky, starch, bicycle, silverware, and aluminum ware businesses, to cite but a few instances, is held in check in this way. So far as the staples are concerned, there would appear to be no difference in this regard between railroads and industrials.

7. There are reasons for thinking that railways are less likely than industrial concerns to refrain from rate (or price) cutting through a fear of spoiling the market. A reduction in railroad rates for the purpose of more fully utilizing the equipment may result in developing some *new* business, but it is more likely to attract away from another line traffic that will move anyhow. This is because the railways' market is limited for the most part to the population reached by its plant; and once this

¹ See Bell, *Quarterly Journal of Economics*, vol. xxxii, p. 523.

market has been served, further traffic can be secured only at the expense of competitors. In any event the future market for transportation service is not spoiled; for supplies of transportation facilities cannot be stored up.¹ The reduction of the prices of industrial products, on the other hand, will tend to spoil the future market. In part it may induce purchases by those who would not be in the market at the normal price (one covering costs and an adequate profit), but in considerable measure also it will stimulate those who will buy anyhow to lay in their supplies at the low level of prices. Thus wholesalers and retailers who foresee the prospects of higher prices at a later date will stock up; and when the demand picks up they will feed out these supplies and thereby retard the restoration of normal conditions.² The market is in greater danger of being spoiled in the case of those commodities for which the demand is inelastic, since a reduction in their prices by definition fails to develop much new business. If a reduction in prices under these circumstances has any effect, therefore, it must be either to attract away the business of a competitor (to his detriment), or to induce dealers to lay in supplies for the future, which spoils the market. In either event the outcome is injurious to the trade.

Furthermore, price cutting by an industrial concern may spoil its future market by creating an impression in the minds of consumers that the article is worth no more than the reduced price at which it is temporarily sold, thus making it difficult for the company to recover its trade with the restoration of prices to a remunerative basis. This point has especial force where another article may be substituted for the article whose price has been reduced. In the case of a railroad, however, such

¹ A reduction in rates may cause industrial concerns to lay in fuel and other supplies, and thus in a sense to store up railroad service. But obviously this cannot be carried far.

² See Marshall, *Principles of Economics* (1898), pp. 446, 447.

power of substitution either does not exist or exists to a limited extent; and as a result there is less hesitation in cutting rates to secure business.¹

Notwithstanding the foregoing considerations there are occasions, it must be admitted, when competition fails temporarily to establish a remunerative price to industry. During periods of industrial depression it is quite possible that the price of some, perhaps many, commodities will fall so low that adequate profits are not earned by some and possibly many of the concerns whose output is normally required to supply the demands. Yet this is quite different from saying that competition fails to establish a *normal* price sufficiently high to keep in business enough firms to supply the normal demand. If profits are insufficient during dull times, they are more than sufficient during good times; and the average return is likely to prove adequate. Individual concerns, to be sure, come and go. Those who have made an unthrifty dispensation of the large profits of the good years may not have reserves adequate to tide them over the lean years, but their place is taken by others, and the industry does not die.

Tho the industry does not die, yet the alternation of periods of prosperity and depression is the cause of much uncertainty and suffering. There is thus force to the argument that combination might be permitted as a means of mitigating the fluctuations of industry. Yet this is not what is in the minds of those business men and capitalists who urge that competition is ruinous; what they allege, as expressed in our economic phraseology, is that "competition fails to fix a normal price remunerative enough to attract the recurrently necessary fresh investments of capital." It would appear that competition does not normally break down in this

¹ For this suggestion I am indebted to Professor F. B. Garver.

regard, and that "the advocacy [by this group] of combination as a means of avoiding overproduction and industrial irregularity is commonly but an excuse for trying to build up a monopoly which will restrict production, and secure (or try to secure) regularity at the expense of extra levies on the public."¹

This phase of the matter may be concluded by an additional citation bearing on the question at issue. "Many persons of the business class," says Professor Taussig, "talk nowadays as if competition were definitely ruinous to producers, and as if there were no escape from disaster except through the trust or *Kartell*."¹ But "competition does not go on automatically, or irrespective of the ultimate outcome. The troubles of capitalists from 'excessive' competition will bring in time their own cure. People will not continue indefinitely to invest in industries whose profits are wiped out by cutthroat underbidding. The real source of difficulty for the capitalists, not clearly perceived by those who say that modern competition of necessity works disaster, is the constant pressure of new accumulations for investment, and the constant tendency to a decline of profits in known and established industries."²

II. STUDY OF INDIVIDUAL INDUSTRIES

The industry that most closely approximates the railroad industry as regards the tendency to ruinous competition is perhaps the iron and steel industry. As already pointed out,³ the iron and steel concerns have a comparatively high level of fixed charges, tho not as high as the railroads. The industry, moreover, is characterized by a large investment in fixed and specialized

¹ Taussig, *Principles of Economics* (1911), vol. ii, p. 53.

² *Ibid.*, p. 436.

³ See p. 483.

plant devoted to the production of a staple commodity, slight variations in the price of which will cause purchasers to switch from one manufacturer to another. The number of producing companies is small as compared with most industries. Small tho it be, yet it is large as compared with the number of railroad companies competing in a given territory. Moreover, the iron and steel industry would appear to be less distinctly one of increasing returns than the railroad industry, since increasing business always involves an increased quantity of raw materials. While there are thus manifest differences in the degree to which competition tends to overreach itself in this industry as compared with the railroad industry, nevertheless the pressure would appear to be distinctly greater than in most manufacturing businesses. This conclusion arrived at on a priori grounds seems to derive some support from the spectacular struggle for supremacy in the business that took place some twenty years ago. The story is familiar to all economists, and need not be reviewed here.¹

Tho conceding that the competitive struggle between the iron and steel concerns during the period from 1898–1901 might have had disastrous consequences for a number of companies, I do not regard it as established that the outcome of this struggle, had it been allowed to proceed, would have been ruinous to the industry; and particularly if we may assume that a monopoly, if established, would not have been tolerated. Let us divide the struggle into its two phases. The first phase related to the organization between 1898 and 1900 of a number of combinations and trusts covering various branches of the iron and steel industry; the second phase related to the organization of the United States Steel Corporation

¹ For a graphic account see the report of the Commissioner of Corporations on the Steel Industry, Pt. I, pp. 98–106; and Meade, *Trust Finance*, pp. 193–217.

itself. To what extent may it be said that these were the natural product of ruinous competition? That the profits of the iron and steel manufacturers during the period of depression that lasted from 1893-97 were in marked contrast to those of the palmy days that had preceded the depression cannot be questioned. The steel trade being "either a prince or a pauper" was in the pauper stage during 1893-97, and, combination or no combination, would have undergone a change after 1897 and entered the prince stage. Is it not reasonable to assume that the long continued period of prosperity from 1897 to 1906 would have permitted the steel trade to recoup itself for the inadequate returns of the lean years, 1893-97? This assumption would appear to be reasonable in view of the fact that in by no means all branches of the steel industry were profits inadequate (for the progressive firms at least) even during the period of dull times.

The wire branch well illustrates this point. The wire trust (the American Steel and Wire Company) was organized in 1899. Its chairman (Mr. John W. Gates) when asked before the Industrial Commission whether it was fierce competition that led to the formation of the wire trust replied in the negative. It was formed, he said, "because we wanted to be the wire manufacturers of the world. . . ." "The Consolidated Steel and Wire Company, of which I was a large owner, made in the last three years of its existence between 27 and 28 per cent per annum net. So that ruinous competition could hardly be said to be the reason for driving us together." . . . "Our companies have always made money."¹

Neither was competition in the tin plate industry ruinous. The profits during the early nineties were enormous. They were so great in fact that many new

¹ Industrial Commission, vol. i, pp. 1033, 1034.

mills were built to avail themselves of these profits. As a result there was a surplus producing capacity, which speedily brought prices down and with them profits. But this competition was not ruinous to the industry. Every witness who testified in the government suit in respect to the financial condition of his own company at the time it was acquired by the American Tin Plate Company admitted either that it was doing a profitable business or was making some profit.¹ The president of the American Tin Plate Company (Mr. Daniel G. Reid) testified before the Industrial Commission that the majority of the tin plate mills were making money — nothing great, but a profit. A number of mills were losing money, but there had been no failures. However, he said, there would have been failures had not the trust been formed.² Mr. Griffiths, a manufacturer of tin plate who sold his plant to the trust, testified that during the period of high prices he had made as high a profit as 100 per cent; and that he had never made less than 20 per cent on his investment. Even in 1898, in which year prices were at their lowest, his books, which were open to inspection, would show that he was making a profit of 20 per cent. In his judgment the pressure of competition was not such as to necessitate a combination. Why then was one formed? Because no matter how large a profit a manufacturer was making he naturally, declared the witness, looked longingly toward the period when he was making the greatest profit; and it was only human nature to want to return to that condition.³

In the crude steel branch of the industry — as distinguished from the finished products branch — competition was perhaps more keen, yet it was not ruinous.

¹ See Brief for the United States in *U. S. v. U. S. Steel Corporation* (No. 6214), Pt. I, p. 89.

² Industrial Commission, vol. i, pp. 866, 867.

³ *Ibid.*, pp. 896-898, 903.

Mr. Carnegie, head of the Carnegie Steel Company, characterized the results of the year 1897 (the last year of the industrial depression) as "eminently satisfactory."¹ Mr. Schwab, of the same concern, admitted that the company had earned an average profit on all its output of approximately \$4.00 a ton "in the worst of times."² The Illinois Steel Company, one of the leading manufacturers of heavy steel products, stated in its annual report for 1897 that it had secured its share of the great increase in production in 1897; that every furnace was then in blast; that the condition of the plants had been well maintained; and that large sums had been expended on betterments and new construction, all of which had been met out of earnings. This company had not been so well off in 1896, to be sure, but this was in part because it had attempted to make large profits on a comparatively small tonnage. To quote from the same report, "There has been a revolution in this condition of affairs, and it seems to have been demonstrated that for the future the policy of small profits on large tonnage furnishes the best assurance of success." Even if, therefore, the profits during 1893-97 were only moderate, they were soon to be followed by much higher profits, resulting from the improved condition of trade and from the reduction in costs made necessary by the lean years of 1893-97.

The formation of the iron and steel combinations and trusts from 1898-1900, tho it greatly restrained competition in several branches of the steel industry, did not eliminate it. Indeed it soon appeared that the formation of these combinations was likely to lead to even more vigorous competition than ever. The mammoth combinations soon threatened to integrate their business so fully as to relieve themselves of all dependence

¹ Brief for the United States in *U. S. v. U. S. Steel Corporation* (No. 481), vol. ii, p. 96.

² *Ibid.*, vol. i, p. 19.

upon each other. Had these threats, some of which had already been translated into action, been fully carried out the result would have been a producing capacity vastly exceeding the demand at remunerative prices, followed by the bankruptcy of the weaker concerns. It is not to be lightly assumed that the averting of the struggle was in the public interest. The struggle would have been a battle of giants, to be sure, but when the smoke of the battle had cleared there would have been something to show for it besides "ruins." The victors — not the victor, for the fight would have ceased long before the elimination of all of the competing concerns — would have emerged, it may be presumed, with plants keyed up to their maximum efficiency and with an ability to produce at a new low level of costs; and the consumers would have been spared the necessity of paying a price for steel products high enough to permit the building up of assets behind the stock that was issued to call off the "dogs of war."

There will be those who will place a different interpretation upon this struggle. To them this whole episode will strikingly illustrate the ruinous nature of competition in the steel industry. They will find in this episode support for the view that the steel industry, among others, is a natural monopoly, like the railroads. However, when it comes to the larger aspects of the problem, it should be borne in mind that the tendency toward ruinous competition in industry is probably at its greatest in the steel industry, the stock illustration of the disastrous effects of competition.¹

Another industry in which the normal workings of competition may perhaps be regarded as unsatisfactory,

¹ The severity of competition in the steel industry has been intensified, of course, by our protective tariffs, whose restrictions have increased the periodic fluctuations in iron and steel prices. See Taussig, *Some Aspects of the Tariff Question*, pp. 146, 147, and Bullock, *Quarterly Journal of Economics*, vol. xv, pp. 208, 209.

as conditions now are, is the anthracite coal industry. We have here a limited and localized natural resource, not subject to foreign competition, the demand for which is distinctly seasonal, and a commodity which, until recent years at least, it was not deemed practicable to store. Moreover, the fixed (non-variable) expenses are comparatively large because of the huge funded obligations incurred by the anthracite coal carriers (or their coal companies) in the process of securing monopoly control of the anthracite deposits.¹ These huge obligations need not have been incurred, had the industry remained on a competitive basis, free from railroad control. But in the situation as it now exists, the only permanent solution of the problem will doubtless prove to be the public ownership of the anthracite coal lands.

We may now turn to an examination of some of the other leading industries that have been subjected at one time or another to trust control.

An important industry in which competition is declared to have been ruinous is the harvesting machine business. In fact, the organizers of the International Harvester Company (the harvester trust) claimed subsequent to its formation that it was the severity of competition that made a combination necessary. They characterized it as "fierce," "demoralizing," and of a character "never known in any other business in the world."² One official went so far as to say that competition was so fierce that neither the manufacturers nor the dealers were making anything.³ Such lugubrious statements must generally be taken with a grain of salt; and in this particular instance they do not appear to be supported by the evidence. The Bureau of

¹ See my *Anthracite Coal Combination in the United States*, pp. 57, 58.

² See Report of the Commissioner of Corporations on the International Harvester Co., pp. 59-61.

³ *Ibid.*, p. 61.

Corporations in its report on the International Harvester Company pointed out that prior to the organization of the trust most of the larger companies had been making considerable profits, and sometimes very large profits.¹ Some concerns had failed, it is true, but their failure was to be attributed to deficient resources, mismanagement, or poor location, rather than to excessive competition. The tendency of the business, it may be observed, was toward concentration to secure the economies of large scale production; and it was therefore only to be expected that some of the less important concerns could not stand the pace. Their disappearance merely represented the "pains of progress."

Complete and altogether satisfactory data on profits the Bureau found it impossible to secure. Such data as it presented were limited to the five companies that united to form the trust, and generally covered only the five years from 1898 to 1902. These five companies, however, were representative, since they included five of the six leading manufacturers, and since they produced over four-fifths of the total output of harvesting machines. The available data showed that in general the profits of the large companies had been quite adequate during the five years preceding the organization of the Harvester Company. The Plano Manufacturing Company, it is true, had sustained a deficit in both 1900 and 1901, and the profits of the Milwaukee Harvester Company had been low in 1901; but the profits of the McCormick Harvesting Machine Company and of the Deering Harvester Company (easily the two largest manufacturers) had been high in every one of the five years, and the profits of the Milwaukee Harvester Company and of Warder, Bushnell and Glessner had generally been high. It is significant that a committee

¹ Report of the Commissioner of Corporations on the International Harvester Co., p. 62.

appointed to consider the advisability of acquiring the business of the five companies that went into the trust reported that "each of them has for several years enjoyed a prosperous, profitable and growing business. Each of the plants is believed to be in excellent condition and supplied with all the facilities necessary for effective manufacturing."¹ The McCormick Company in particular was growing rapidly. Thus, between 1899 and 1902 its assets increased from \$12,000,000 to \$50,000,000, all out of earnings.² The Bureau of Corporations stated by way of conclusion: "This large increase in the volume of business taken in connection with the comparatively high rates of profits earned on the capital invested is strong evidence of the fact that the companies which originally formed the International Harvester Company were generally not suffering from excessive competition. The combination, therefore, cannot be justified on the principle of self-preservation."³

The sugar refining industry illustrates even better than the harvester industry the weeding out process that characterizes a competitive régime. During the seventies and eighties competition in the sugar refining industry was quite keen; between 1867 and 1887 about thirty-six refineries went out of business.⁴ However, it should be recalled that it was during this period that the modern movement toward large scale production manifested itself in the sugar refining industry; and therefore a considerable decline in the number of sugar refining companies was only to be anticipated.⁵ It can

¹ Brief for the United States in *International Harvester Co. v. U. S.* (No. 56), pp. 18, 19.

² *Ibid.*, p. 8. In part this growth resulted from the fact that during 1899-1901 no dividends were paid.

³ Report on the International Harvester Company, p. 66.

⁴ Vogt, *The Sugar Refining Industry in the United States*, p. 18.

⁵ Professor Bullock has pointed out (*Atlantic Monthly*, vol. 87, p. 740) that the tariff, by enabling domestic refiners to secure unusual profit, was largely responsible for

hardly be doubted that as a result of the attempt of the progressive refiners to secure the economies of large scale production the producing capacity of the country overran the consuming capacity at remunerative prices, and that for a time the price of sugar was not sufficiently high to afford a satisfactory profit. Yet presumably the companies that survived (twenty-three in 1887, operating twenty-six plants)¹ were those that were quickest to adapt themselves to the situation; and therefore those that were fittest to survive. The elimination of the weaker concerns undoubtedly represented a waste of capital, but I cannot agree with the opinion expressed by Professor Jenks that this waste was a decided injury to the country.² The waste, in my view, was more than offset by the reduction in costs consequent upon the adoption of more efficient methods of production. Temporarily therefore competition might be ruinous to the industry — it was permanently ruinous for the refiners that could not stand the pace — but taking a broad view it is reasonable to suppose that prices, tho permanently on a lower level, would nevertheless remain sufficiently high to remunerate the refiners adequately.

On at least one other occasion — and this was after the formation of the trust (1887) — the price of sugar fell so low that there was no profit to the refiners. In order that there might be a profit in the refining of sugar the margin (the difference between the price of raw sugar and the finished product) had during the late nineties to be at least one-half of a cent per pound, and probably more.³ Yet during the winter of 1898-99 the margin went as low as thirty-two hundredths of a cent.⁴

the excessive investment in the industry; and that the case, therefore, does not illustrate the normal workings of competition.

¹ Original Petition in *U. S. v. American Sugar Refining Co.*, pp. 37-40.

² See Jenks and Clark, *The Trust Problem*, p. 139.

³ See *Industrial Commission*, vol. i, pp. 88, 94, 112, 150 (Testimony).

⁴ *Ibid.*, p. 138 (Testimony).

However, the low price of refined sugar that occasioned this low margin resulted directly from the attempt of the sugar trust to eliminate its competitors — “interlopers” Mr. Havemeyer called them — and particularly the coffee firm of Arbuckle Brothers, which had been attracted into the sugar business by the large profits prevailing under monopoly prices. The trust did not succeed in eliminating the Arbuckle firm, but it did subject it to a loss of approximately one and a quarter million dollars.¹ The remaining competitors, however, proved more tractable, and all, with one exception, were brought into harmony with the trust. Mr. Havemeyer characterized this particular period of competition as “most ruinous,” but if so it was not because competition is perforce ruinous, but because he endeavored (by unfair devices) to make it so for those that ventured to interfere with the trust’s control of the industry.

In the tobacco business the first trust to be organized was in the cigarette branch. The American Tobacco Company, organized in 1890, represented a consolidation of five concerns producing 95 per cent of the total output of cigarettes. The concentration of so large a percentage of the country’s business in a few hands had resulted from the increasing use of machinery, which was characteristic of the period preceding 1890.² The business being thus concentrated, competition was naturally severe. Very extensive advertising was resorted to, and large premiums were given to merchants and consumers. The leading concern, W. Duke, Sons and Company, expended in one year (1899) \$800,000 in advertising, or 20 per cent of its receipts.³ However, not

¹ Hearings on the investigation of the American Sugar Refining Co., 1911-12, pp. 1131, 1132.

² See the Report of the Commissioner of Corporations on the Tobacco Industry, vol. i, pp. 63, 64.

³ Brief and Argument for the American Tobacco Co. in *U. S. v. American Tobacco Co.* (Nos. 316 and 317), p. 12.

all of this expenditure was made to secure competitive business; in part it was for the purpose of warding off so-called moral legislation designed to forbid the use of cigarettes.¹ There is not a great deal of evidence to show how severe this competition between the cigarette companies was. The Supreme Court characterized it as "fierce and abnormal."² Another branch of the government, on the other hand, declared that all of the five companies were doing a profitable and expanding business.³ The president of the Duke concern admitted that his firm, which was worth about \$250,000 in 1885, was worth \$7,500,000 in 1889; and that the company's output of cigarettes increased from approximately 30,000,000 in 1883 to 940,000,000 in 1889.⁴ Certainly the leading concern found the profits of the business enormous, despite the large outlays for competitive purposes.

Having effected a monopoly in the cigarette branch the American Tobacco Company next turned its attention to the plug tobacco branch. In 1893 Mr. Duke, the president of the American Tobacco Company, endeavored to engineer a combination of plug concerns, but failing in this he instituted in 1894 an aggressive campaign for the control of the plug business. As a part of the competitive warfare prices were cut below cost.⁵ The principal brand employed in this fight was appropriately termed "Battle Ax." In 1891 this brand had retailed at 50 cents per pound; in 1894 the price was reduced to 30 cents.⁶ This policy of price cutting was accompanied by an advertising campaign which was pushed most vigorously in the territory of the leading competitors. In some sections, indeed, agents of the

¹ Brief and Argument for the American Tobacco Co. in *U. S. v. American Tobacco Co.* (Nos. 316 and 317), p. 14. ² 221 U. S. 157.

³ Original Petition in *U. S. v. American Tobacco Co.* (1907), p. 14.

⁴ Transcript of Record in *U. S. v. American Tobacco Co.* (No. 660), vol. iv, pp. 334-337. ⁵ 221 U. S. 160.

⁶ Report of the Commissioner of Corporations on the Tobacco Industry, vol. i, p. 96.

American Tobacco Company presented every man they met with a free sample of "Battle Ax." If this competition was ruinous to the trust — its losses on the plug business from 1895–98 aggregated over \$3,300,000¹—how much more so must it have been ruinous to the independent concerns that were unable to make up their losses in the plug branch out of the enormous profits of the cigarette business. Its ruinous character resulted, however, from the fact that the cigarette trust was deliberately manoeuvring to force the manufacturers of plug tobacco into a combination; and in this plan it was successful.

The same tactics were employed in the snuff branch with success; and in the cigar branch, but without success. In the cigar branch machinery could not be effectively employed, as in the other branches, and thus small establishments were at no great disadvantage as compared with large ones. As a result competition was and still is the characteristic feature of this branch of the industry.

The whisky industry has often been cited as illustrating the disastrous nature of competition. It cannot be questioned that there have been periods in this industry when the productive capacity was greatly in excess of the consuming capacity at paying prices. The close of the Civil War, for example, found the country with distilleries able to produce three times as much whisky as was demanded.² But this situation was the result of ill-advised legislation, and not of the normal workings of competition. The federal government in raising revenue for the prosecution of the Civil War increased on numerous occasions the internal revenue tax on whisky, but in each case it permitted a considerable period to

¹ Report of the Commissioner of Corporations on the Tobacco Industry, vol. i, p. 367.

² Jenks, *Political Science Quarterly*, vol. iv, p. 298.

elapse before the increased rate was to become effective. During this interval distilleries were naturally operated to their maximum capacity; for the stocks thus accumulated were not charged the higher rate of taxation. The profits realized by the distillers during this period were so great that many new distilleries were built to secure a share thereof.¹ Naturally upon the conclusion of the war there was a surplus capacity, and particularly in view of the reduced demand for alcohol in industry, which could not afford to use it in such large quantities at high prices.

To meet this situation there were created a number of pools; and when these failed to bring permanent relief there were organized a series of concerns aspiring to trust control. But these agencies, tho they increased for a time the profits of the distillers, did not succeed in eliminating the evils which they were designed to cure. This was partly because these organizations overreached themselves. In the endeavor to secure large profits they pushed prices to such a point that it was profitable to build new distilleries; and as a result prices fell even lower than they would have done under conditions of free competition.² In 1895 the whisky trust (organized in 1887) went into the hands of a receiver. It was succeeded by other concerns ambitious to maintain a monopolistic position, but none of them particularly successful.³ They not only failed to control the industry, but generally speaking they were unable to earn even normal returns. Moreover, the industry has continued to be characterized by those ups and downs of business

¹ See Bullock, *Quarterly Journal of Economics*, vol. xv, p. 208; and Jenks, *Political Science Quarterly*, vol. iv, p. 298.

² See Jenks, *Trust Problem* (1900), p. 149.

³ The immediate successor of the concern that failed was never a "flourishing institution"; it never paid any dividends; and according to its president "always was a wreck." *Industrial Commission*, vol. i, pp. 78 (Digest), 840.

which persevere in industries controlled by trusts as well as in those subject to free competition.

There are a number of other industries which it is not proposed to discuss in much detail, but as to which the available evidence indicates that the establishment of a trust was not necessitated by ruinous competition.

The National Cordage Company (the cordage trust) was incorporated in 1887, and by 1892 controlled 90 per cent of the country's output of rope and cordage. Mr. Waterbury, a former president of the company, testified that every concern that came into the trust had been making a profit for a great many years; that they were all practical men and had made fortunes in the business many years before.¹ In part, of course, these profits may have been the result of pools, which were quite common in this industry during the eighties. As is well known the trust was not successful. It failed in 1893; and its president placed himself on record to the effect that there was no advantage in consolidation in this industry.²

The National Wall Paper Company (the wall paper trust) was organized in 1892. Tho there had been a profitable pool for several years after 1880, there was an open market for five years prior to 1892. During this period prices were reduced and some manufacturers withdrew from the business, yet a number of the more progressive manufacturers prospered. The president of the National Wall Paper Company stated that most of the manufacturers who entered the trust in 1892 indicated that they would be entirely satisfied if the new corporation earned as large profits as they had individ-

¹ Industrial Commission, vol. xiii, p. 129. Dewing in his *Corporate Promotions and Reorganizations* states (p. 162) that this industry is competitive, and always has been and still is profitable.

² Industrial Commission, vol. xiii, p. 135. Another cordage manufacturer asserted that while there might again be an association in the industry, there would never be another trust. *Ibid.*, p. 163.

ually been making for several years.¹ Apparently, therefore, competition had not been disastrous. However, after an experience of eight years the wall paper trust, finding itself overwhelmed by competition, decided to dissolve; and the operation of the majority of its plants was taken over by the original owners.²

The American Malting Company (the malt trust) was formed in 1897. Its organization was not rendered necessary by the conditions of competition. To be sure, competition had been active, and in the period that followed the panic of 1893 times had been hard. However, an investigating committee of the board of directors of the company reported subsequently that the malsters owning the plants acquired by the trust had made money, and that when the company was organized there had been in the trade generally a fair margin of profit.³ Mr. Dewing in his chapter on the American Malting Company states that "there is no doubt but that the malt houses entering the combination were, as a whole, on a paying basis."⁴ Moreover, it is significant that the largest concern — Neidlinger and Sons — flatly refused to enter the combination.

The trust certainly did not mend matters; in fact, it made them worse. Its formation was soon followed by increased rather than lessened competition, with the result that the profits of the trust amounted to less than one-third of the profits of the constituent companies during the competitive period.⁵

The American Bicycle Company (the bicycle trust) was incorporated in 1899. It acquired the property of forty-eight concerns manufacturing bicycles and bicycle parts. A careful investigator states that "there is every

¹ Industrial Commission, vol. xiii, p. 283.

² *Ibid.*, p. 285.

³ Commercial and Financial Chronicle, vol. lxx, p. 479.

⁴ Corporate Promotions and Reorganizations, p. 273.

⁵ *Ibid.*, p. 304.

reason to believe that the constituent manufacturing companies were earning liberal profits.”¹ To be sure, the profits in 1898 were much less than they had been during the halcyon days. During the years immediately preceding 1895 the business had been enormously profitable. The demand for bicycles had far outrun the capacity of the plants, and those who were prepared to manufacture bicycles made very large profits.² The business, in fact, was so profitable that a great many people embarked in it expecting to recover their investment in two or three months. As a result in the course of a few years the supply outran the demand, and prices and profits declined. Tho the strongest concerns continued to make money, the industry was approaching a condition, so the vice-president stated, in which it was feared that even the strongest concerns could not realize a profit.³ As a result the trust was formed.

The establishment of a trust brought no relief. Hardly had it been established when the bicycle craze came to an end; and within three years the American Bicycle Company was in receivers' hands. The next year (1903) a new company was organized to take over the remains of the trust. This company sold most of the bicycle plants or converted them into automobile plants, and by 1906 was operating only three bicycle plants. The next year it also failed. Another reorganization was carried through, the new company operating only one plant, in which it made not only bicycles but also automobile bodies. In 1913, however, it went the way of its predecessors.

The American Can Company (the tin can trust) was formed in 1901. The federal court before which the

¹ Dewing, *op. cit.*, p. 252.

² See affidavit of the vice-president of the American Bicycle Co., Industrial Commission, vol. xiii, p. 689.

³ *Ibid.*

dissolution suit against this company was tried found in substance that while the industrial depression from 1893-97, combined with a severe price war in 1898, had cut in notably on the profits of the manufacturers, the returns during the years that followed were ample.¹ At the time of the organization of the trust the industry was experiencing great prosperity. A few manufacturers, to be sure, declared that they were not making money during the competitive period, yet a great many admitted that their business had been profitable.²

Still other industries as to which it will doubtless be conceded, without adducing any evidence, that competition prior to the establishment of a trust was not ruinous are the oil,³ aluminum, shoe machinery, camera, nickel, and meat industries.

Another group of industries comprises those in which there is perhaps more ground for supposing that competition was distinctly severe, but in which the establishment of a trust failed to mend matters appreciably.

The corn starch industry illustrates this group.⁴ Up to 1880 this industry grew very rapidly. During the course of the next decade the trade was characterized at times by overproduction, low prices and high selling expenses. It is noteworthy that the operation of competition was unrelieved by pooling agreements of any kind.⁵ The first vice-president of the National Starch Manufacturing Company, organized in 1890 as the starch trust, in an affidavit stated that "the producing capacity

¹ 230 Fed. 865.

² Petitioner's Summary of Evidence in *U. S. v. American Can Co.* (No. 40), pp. 40-72.

³ With respect to this industry the Federal Trade Commission said: "There appears to be no economic necessity of monopoly in the petroleum-refining industry." Report on the Price of Gasoline in 1915, pp. 146-148. With respect to the social undesirability of plant duplication it said: "The cost of such duplication is the price of competition, and, in the judgment of this Commission, in this industry competition is worth the price." *Ibid.*, p. 154.

⁴ See Dewing, *op. cit.*, chap. ii.

⁵ *Ibid.*, p. 53.

of all the plants together was considerably beyond the need of the market at remunerative rates"; that some plants had been closed; that others were in receivers' hands; and that the best concerns were making some money, tho not much.¹ However, he also stated that had the owners of the efficient plants realized the condition of the poorer plants, they might possibly have decided to remain outside of the organization and to have attempted to drive the poorer plants out of existence. Instead the poorer plants were purchased and closed, thus saddling the trust with their cost. From the point of view of the public it would probably have been better had these inefficient plants been allowed to shuffle off through the usual process. Be that as it may, the trust in 1893 was obliged to pass the dividend on its second preferred stock because of excessive competition and dull trade, and shortly thereafter the dividend on the first preferred. To escape the consequences of the highly competitive conditions that continued to prevail a new trust was formed in 1900 under the name of the National Starch Company, and most of the competitors were absorbed. But the second company was no more successful than the first; and when in 1902 it united with the Corn Products Company (the glucose trust) it was on the "verge of bankruptcy."²

The United States Leather Company (the sole leather trust) was formed in 1893. The vice-president of the company testified that prior to its organization the tanners kept their plants running whether there was any money in it or not; and that in 1892 there "seemed" to be an overproduction of sole leather.³ This temporary condition does not, of course, necessarily indicate a state

¹ Industrial Commission, vol. xiii, p. 672.

² Dewing, *op. cit.*, p. 93.

³ Industrial Commission, vol. xiii, pp. 685, 687. Dewing, *op. cit.*, p. 18, states that in 1892 there were "signs of marked overproduction."

of "ruinous competition." At any rate the formation of the trust does not appear to have brought relief. As Mr. Dewing points out, this industry is one in which the economic conditions do not favor even large scale production, let alone combination. The necessary investment in plant is small, and both the raw material and the finished product are handled under highly competitive conditions. The result was that the price of leather continued to be fixed upon as competitive a basis as before the formation of the company,¹ and net profits up to 1901 were no greater.² Of recent years the Central Leather Company, which succeeded to the property of the original company, has been prosperous, tho it has been subject to keen competition.

The National Salt Company (which effected monopoly control shortly after its formation) was incorporated in 1899. Its president alleged that it was organized by the manufacturers for their self-preservation; that competition in many sections was "intense and vicious," affecting not only prices but quality.³ In some cases sales were made below cost. However, by these remarks the witness did not mean to say that there was no profit to be made in the business. Properties that were well located, well managed and producing a superior grade of goods made money; the others did not. His own company for three years prior to its sale to the National Salt Company averaged 20 per cent every year, but this was a very well-located property.⁴ As Mr. Dewing has pointed out a very large part of the cost of producing salt is represented by interest on the cost of sinking a well; and therefore frequently it is nearly as economical to operate at a loss as to close the plant.⁵

¹ Dewing, *op. cit.*, p. 25.

² Industrial Commission, vol. xiii, p. 687.

³ *Ibid.*, p. 253.

⁴ *Ibid.*, p. 256.

⁵ The ratio of capital to annual value of products is high in the salt industry. See p. 486.

It was therefore believed that consolidation in this industry would prove particularly advantageous, the more so since the demand for salt is highly inelastic.

Fortunately or unfortunately it did not work out in this fashion. The supply of salt is practically unlimited, and the trust found it impossible to maintain the price. It suffered heavy losses on the salt that it bought as a means of sustaining the market. Within three years of its formation the company went bankrupt. The property was sold at public auction; and the company dissolved. Its business passed over to the International Salt Company, which sold much of the property, and now confines itself largely to the New York field. Even it has not been prosperous, and its president has conceded that competition in this industry "will always prevail."¹

The Asphalt Company of America (the asphalt trust) was formed in 1899. The principal reason for its organization was said to be "the desire to diminish the severity of competition."² However, it was conceded that the principal companies were able to make a profit; the fear was that a condition was approaching in which prices would be cut to cost or even below cost.³ Certainly the leading concern, the Barber Asphalt Paving Company, had been very prosperous, even through the depression of the middle nineties.⁴ The head of this concern seems to have been opposed to the organization of a trust; apparently he did not regard the situation as hopeless. The combination fever was in the air, however, and he was overruled. Unfortunately for the future success of the trust it was overloaded with bonds. New competition soon appeared at every point, and the company

¹ *Commercial and Financial Chronicle*, vol. 88, p. 1311.

² *Industrial Commission*, vol. xiii, p. 678.

³ *Ibid.*

⁴ *Dewing*, *op. cit.*, pp. 414, 415.

found itself unable to meet its obligations. Toward the close of 1901 — less than three years after its incorporation — it passed into receivers' hands. In the reorganization its entire assets were acquired by the General Asphalt Company.

A final group of industries is that in which no trust has ever been established, and in which, therefore, there is a strong presumption that competition, tho it continually eliminates the inefficient concerns, is in no sense ruinous to the industry. These industries, to cite but a few, include the following: automobiles; shoes; soft coal; cotton goods (not including cotton yarn and cotton duck); woolen and worsted goods; silk manufactures; men's and women's suits; cigars; soap; flour; and hats.

The foregoing analysis — theoretical, statistical, and descriptive — would appear to justify the conclusion that competition in manufacturing industry is not definitively ruinous. The statistical basis is not fully adequate — there is an excellent opportunity here for constructive work on the part of the Federal Trade Commission; nevertheless such data as are available point to marked differences between the railroad industry, in which competition does tend to become ruinous, and manufacturing industries. Theoretical analysis likewise brings out these differences; it appears that the factors that tend to make railroad competition ruinous are not present to anything like the same degree in the case of manufacturing enterprises. Finally, a study of individual industries, particularly those in which trusts have been formed, establishes that the competitive returns on the whole were adequate and that the formation of trusts was seldom necessitated by the severity of competition.

Tho competition is not generally ruinous in industry, yet there may be particular industries in which it does lead to disaster. The iron and steel industry and the anthracite coal industry perhaps fall within this group. However, the conclusion as to these two businesses must be regarded as tentative; it is intended here merely to stress the importance of specific analysis, and to suggest a method of approach to the problem.

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